



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Work Order ID 76835

\*76835\*

Page 2

November 22, 2011 8:10:00 AM

Item ID: D6104-009 Accept \*N900040100\* Setup Start \*NS1\*  
 Revision ID: Stop \*NS2\*  
 Item Name: Round Billet, 17-4  
 Start Date: 11/22/11 Start Qty: 12.00 \*12\* Cust Item ID:  
 Required Date: 12/06/11 Req'd Qty: 12.00 \*12\* Customer:  
 Reference:

Approvals: Process Plan: Date: Tooling: Date: Run Start \*NR1\*  
 QC: Date: SPC (Y/N): Date: Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: MAT 043	0.00							
*130*									
Packaging	Memo	0.00	SL	40204		12			
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							
*140*									
QC	Memo	0.00							
Quality Control									

11/22/14

11/12/14  
(12)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



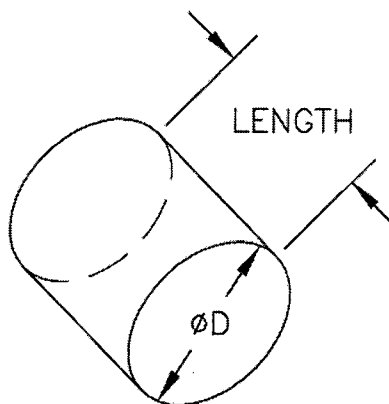
DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29 *[Signature]*

## SPECIFICATION CONTROL DRAWING

C.L. 111122  
W10: 76835



MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

SHIP FROM:  
 THYSSENKRUPP MATERIALS NA  
 2821 LANGSTAFF ROAD  
 CONCORD, ONTARIO L4K 5C6  
 Tel: 905 669 9444 Fax: 9057389033

SHIP TO: ( 1 )  
 DART AEROSPACE  
 1270 ABERDEEN ST  
 HAWKESBURY, ON K6A 1K7  
 Tel: 613-632-9577 Fax: 613-632-1053

NO: PEC 743504  
 Ship Date 12Dec11 at 16:38 From PFW  
 Probill  
 Via VIM TRANSFER  
 FOB CONCORD  
 Frt PREPAID  
 Route 0- 0 Manifest  
 Vhcle Trailer  
 Slp CARMELA AGNIHOTRI  
 Sold To: ( 20115 )  
 DART AEROSPACE  
 1270 ABERDEEN ST  
 HAWKESBURY, ON K6A 1K7

B I L L O F L A D I N G

1) Our Order PEC-393125- 1 Your PO # 15517  
 STAINLESS STEEL ROUND BAR 17-4 STAINLESS  
 5.25" DIA X 4.1000"  
 D6104-009

DO NOT CHARGE E/S - ADDED ON ORDER S/O#393122

Heat Number	Tag No	Quantity	PCS	Wt LBS
253271	17847	4 ' 1.2000 "	12	302

2) Our Order PEC-393125- 2 Your PO # 15517  
 STAINLESS STEEL ROUND BAR 17-4 HFRT  
 4.50" DIA X 5.1000"  
 D6104-007P

Heat Number	Tag No	Quantity	PCS	Wt LBS
254453	510093	5 ' 1.2000 "	12	280

TOTAL:	Tags	PCS	LBS
	2	24	582

MILL TEST REPORTS, PACKING SLIPS ARE TO SENT  
 WITH MATERIAL AND FAXED TO THE CUSTOMER PRIOR  
 TO SHIPPING.

ATTN: CHANTAL/LINDA

\*\* ALL PACKING SLIPS MUST HAVE THE HEAT NUMBER \*\*  
 \*\* REFERENCED ON IT \*\*

TOTAL (1,2) 1 SKID, 1 BDL GW. 644 LBS

\*\*\*\*\* CLOSED FOR THE HOLIDAYS \*\*\*\*\*

Page: 1 ....Continued

TOUTES ERREURS ET/OU MARCHANDISES MANQUANTES DOIVENT ÊTRE  
 RAPPORTÉES IMMÉDIATEMENT.

ERRORS OR SHORTAGE MUST BE REPORTED IMMEDIATELY

RETOUR DE MARCHANDISES AVEC NOTRE NUMERO D'APPROBATION SEULEMENT.  
 MERCHANDISE MAY NOT BE RETURNED WITHOUT OUR APPROVAL NUMBER.

REÇU EN BONNE CONDITIONS / RECEIVED IN GOOD CONDITION

DATE

TVQ/QST# 1017327981 TQ001 TPS/GST TVH/HST # 140223934 RT0001

8/2

28/11699006

ddnuvuesssuui

MF 20120 21 220 1100

B I L L O F L A D I N G No: PEC 743504  
 Ship From: THYSENKRUPP MATERIALS NA Ship Date 12Dec11 at 16:38 From PFW  
 2821 LANGSTAFF ROAD Probill  
 CONCORD, ONTARIO L4K 5C6 Via VIM TRANSFER  
 Tel: 905 669 9444 Fax: 9057389033 FOB CONCORD  
 Frt PREPAID  
 Route 0- 0 Manifest  
 Vhcle Trailer  
 Slp CARMELA AGNIHOTRI  
 Sold To: ( 20115)  
 DART AEROSPACE  
 Ship To: ( 1)  
 DART AEROSPACE

=====  
 B I L L O F L A D I N G  
 ON DEC. 26TH & 27TH, 30TH & JAN. 2ND.  
 WE ARE OPENED FOR BUSINESS ON DEC. 28TH & 29TH.  
 HAVE A HAPPY HOLIDAY SEASON!  
 \*CUSTOMER PICK-UP HRS AT THYSENKRUPP MATERIALS NA  
 CONCORD, ONT.\* \*\*\* 9:00 AM TO 4:00 PM \*\*\*  
 \*\*\*\* TEL: 800-926-2600 \*\*\*\*  
 \*\*\*\*\*  
 \* WE STOCK STAINLESS STEEL \*  
 \* PLEASE LET US QUOTE YOUR NEXT REQUIREMENT \*  
 \*\*\*\*\*  
 \*\*\*PLEASE NOTE A \$25.00 ENERGY SURCHARGE WILL BE  
 ADDED TO EVERY ORDER.\*\*\*

Page: 2 .... Last

TOUTES ERREURS ET/OU MARCHANDISES MANQUANTES DOIVENT ÊTRE  
 RAPPORTÉES IMMÉDIATEMENT.  
 ERRORS OR SHORTAGE MUST BE REPORTED IMMEDIATELY  
 RETOUR DE MARCHANDISES AVEC NOTRE NUMERO D'APPROBATION SEULEMENT.  
 MERCHANDISE MAY NOT BE RETURNED WITHOUT OUR APPROVAL NUMBER.

REÇU EN BONNE CONDITIONS / RECEIVED IN GOOD CONDITION  
 TVQ/QST# 1017327981 TQ001 TPS/GST TVH/HST # 140223934 RT0001

DATE



**VALBRUNA****SLATER STAINLESS, INC.**2400 Taylor Street West, P.O. Box 630  
Fort Wayne, Indiana USA 46801  
Phone: 260-434-2892 Fax: 260-434-2905**Product Certification Report**Report Number: **4647360**

Certified on Apr 05, 2011 Page 1 of 2

Order I.D. <b>1100324 002</b>		Order Date <b>1/31/11</b>		Commodity Code	
Dim 1 <b>5.2500</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>253271</b>	Customer I.D. <b>002573</b>	Customer Purchase Order <b>5400092936-R01</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>17-4</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>414222</b>	Weight	

**Ship To**Attention: TKX LOGISTICS  
COPPER AND BRASS SALES  
8001 THYSSENKRUPP PARKWAY  
NORTHWOOD, OH 43619**Sold To**VALBRUNA STAINLESS, INC.  
2400 TAYLOR STREET WEST  
FORT WAYNE, IN 46802**Lifts: 0041**

CONDITION A

UNS S17400

ASTMA 484-09

ASTMA 564-04

ASMESA 564 07 ED

ASTMA 370-08A

**AMS 5643R (except finish)****CHEMICAL ANALYSIS**

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.023	.55	.025	.023	.42	15.39	4.16	.23	3.21	.03	.27	.000	.270

**BRINELL HARDNESS ASTM E10-08**

HBW

349

**TENSILE PROPERTIES ASTM E8-08****CAPABILITY**

Cap HB	TS (PSI)	.2%YS (PSI)	%EL(4d)	%RA	AGE(F)
428	201000	183300	14.4	51.3	900

**MAGNETIC PARTICLE TEST**

FREQ SEV

AVG .00 .00

**PRODUCTION HEAT TREATMENT**

SOL-ANN(F)	SOL-ANN(HR)	QUENCH
1900	8.50	Air

**MACRO ASTM E340-00/E381-01**

MACRO

OK

OK

**PERCENT FERRITE**

% FERRITE Etchant Magnification X

AVG 1.2 Marbles 100

Free of mercury and low melting alloy contamination.

No welding or weld repair done.

Reduction ratio 5 To 1 Min.

Tensile specimen size .505".

Chemical testing performed to one or more of the following ASTM methods: E415-08, E572-02a, E1019-08, E1085

Location of tensile fracture: inside middle of gage length.

Chemical Analysis performed at Acciaierie Valbruna, Italy.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett



VALBRUNA

SLATER STAINLESS, INC.

2400 Taylor Street West, P.O. Box 630  
Fort Wayne, Indiana USA 46801  
Phone: 260-434-2892 Fax: 260-434-2905

Product Certification Report

Report Number: 4647360

Certified on Apr 05, 2011 Page 2 of 2

Order I.D. 1100324 002		Order Date 1/31/11		Commodity Code	
Dim 1 5.2500	Dim 2 .0000	Dim 3 .0000	Heat I.D. 253271	Customer I.D. 002573	Customer Purchase Order 5400092936-R01
Product Shape Rounds		Product Surface HR & Rough Turned			Customer Grade 17-4
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 414222	Weight	

Ship  
To

Attention: TKX LOGISTICS  
COPPER AND BRASS SALES  
8001 THYSSENKRUPP PARKWAY  
NORTHWOOD, OH 43619

Sold  
To

VALBRUNA STAINLESS, INC.  
2400 TAYLOR STREET WEST  
FORT WAYNE, IN 46802

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.

TK Materials  
pec 235018  
302.454  
2401573022  
12

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Manager Laboratory Services

Dennis Hackett

**VALBRUNA**

**SLATER STAINLESS, INC.**  
 2400 Taylor Street West, P.O. Box 930  
 Fort Wayne, Indiana USA 46801  
 Phone: 260-434-2892 Fax: 260-434-2905

**Product Certification Report****Report Number: 4702250**

Certified on Sep 21, 2011 Page 1 of 2

Order I.D. <b>1101783 003</b>		Order Date <b>7/08/11</b>		Commodity Code	
Dim 1 <b>4.5000</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>254453</b>	Customer I.D. <b>002474</b>	Customer Purchase Order <b>30806</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>630</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>415317</b>	Weight	

*Ship To*  
**VALBRUNA STAINLESS, INC.**  
**13950 BENSON AVENUE**  
**CHINO, CA 91710**

*Sold To*  
**VALBRUNA CORP.**  
**31 IRON HORSE ROAD**  
**OAKLAND, NJ 07436**

**Lifts: 0016 0017**

API 6A AISI 17400 EN 10204 3.1

UNS S17400

AMS 5643R (except finish) ASTM 564-10 Type 630 ASTM A484-10

ASMESA-564-07

**CHEMICAL ANALYSIS**

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.04	.48	.017	.024	.44	15.83	4.43	.19	3.39	.04	.27	.001	.27

**BRINELL HARDNESS ASTM E10-08**

HBW

348

**TENSILE PROPERTIES ASTM E8-08****CAPABILITY**

Cap HB	TS (PSI)	.2%YS (PSI)	%EL(4d)	%RA	AGE(F)
430	198800	174800	11.0	48.6	900

**MAGNETIC PARTICLE TEST**

FREQ SEV

AVG .00 .00

**PRODUCTION HEAT TREATMENT**

SOL-ANN(F)	SOL-ANN(HR)	QUENCH
1900	8.25	Air

**MACRO ASTM E340-00/E381-01**

MACRO

OK

OK

OK

**GRAIN SIZE ASTM E112-96**

GRAIN SIZE	Etchant	Magnification X
6	Marbles	100

**PERCENT FERRITE**

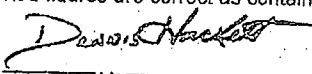
% FERRITE	Etchant	Magnification X
9	Marbles	100

Reduction ratio 5 To 1 Min.

Electric Furnace melted; AOD refined.

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Manager Laboratory Services

  
 Dennis Hackett

**VALBRUNA****SLATER STAINLESS, INC.**2400 Taylor Street West, P.O. Box 630  
Fort Wayne, Indiana USA 46801  
Phone: 260-434-2892 Fax: 260-434-2905**Product Certification Report**Report Number: **4702250**

Certified on Sep 21, 2011 Page 2 of 2

Order I.D. <b>1101783 003</b>		Order Date <b>7/08/11</b>		Commodity Code	
Dim 1 <b>4.5000</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>254453</b>	Customer I.D. <b>002474</b>	Customer Purchase Order <b>30806</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>630</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>415317</b>	Weight	

*Ship  
To*VALBRUNA STAINLESS, INC.  
13950 BENSON AVENUE  
CHINO, CA 91710*Sold  
To*VALBRUNA CORP.  
31 IRON HORSE ROAD  
OAKLAND, NJ 07436

Ultrasonic test OK.

Chemical testing performed to one or more of the following ASTM methods: E415-08, E572-02a, E1019-08, E1085-95,

Location of tensile fracture: inside middle of gage length.

Chemical Analysis performed at Acciaierie Valbruna, Italy.

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.

2401574202  
12/5/11  
12R

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info.

I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

**VALBRUNA**

**SLATER STAINLESS, INC.**  
 2400 Taylor Street West, P.O. Box 630  
 Fort Wayne, Indiana USA 46801  
 Phone: 260-434-2892 Fax: 260-434-2905

**Product Certification Report**Report Number: **4647360**

Certified on Apr 05, 2011 Page 1 of 2

Order I.D. <b>1100324 002</b>		Order Date <b>1/31/11</b>		Commodity Code	
Dim 1 <b>5.2500</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>253271</b>	Customer I.D. <b>002573</b>	Customer Purchase Order <b>5400092936-R01</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>17-4</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>414222</b>	Weight	

**Ship To**

Attention: TKX LOGISTICS  
 COPPER AND BRASS SALES  
 8001 THYSSENKRUPP PARKWAY  
 NORTHWOOD, OH 43619

**Sold To**

VALBRUNA STAINLESS, INC.  
 2400 TAYLOR STREET WEST  
 FORT WAYNE, IN 46802

**Lifts: 0041**

CONDITION A

UNS S17400

ASTMA 484-09

ASTMA 564-04

ASMESA 564 07 ED

ASTMA 370-08A

AMS-5643R-(except finish)**CHEMICAL ANALYSIS**

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.023	.55	.025	.023	.42	15.39	4.16	.23	3.21	.03	.27	.000	.270

**BRINELL HARDNESS ASTM E10-08**

HBW

349

**TENSILE PROPERTIES ASTM E8-08****CAPABILITY**

Cap HB	TS (PSI)	.2%YS (PSI)	%EL(4d)	%RA	AGE(F)
428	201000	183300	14.4	51.3	900

**MAGNETIC PARTICLE TEST**

FREQ SEV

AVG .00 .00

**PRODUCTION HEAT TREATMENT**

SOL-ANN(F)	SOL-ANN(HR)	QUENCH
1900	8.50	Air

**MACRO ASTM E340-00/E381-01**

MACRO

OK

OK

**PERCENT FERRITE**

% FERRITE	Etchant	Magnification X
AVG 1.2	Marbles	100

Free of mercury and low melting alloy contamination.

No welding or weld repair done.

Reduction ratio 5 To 1 Min.

Tensile specimen size .505".

Chemical testing performed to one or more of the following ASTM methods: E415-08, E572-02a, E1019-08, E1085

Location of tensile fracture: inside middle of gage length.

Chemical Analysis performed at Acciaierie Valbruna, Italy.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info.

I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

**VALBRUNA****SLATER STAINLESS, INC.**2400 Taylor Street West, P.O. Box 630  
Fort Wayne, Indiana USA 46801  
Phone: 260-434-2892 Fax: 260-434-2905**Product Certification Report****Report Number: 4647360****Certified on Apr 05, 2011 Page 2 of 2**

Order I.D. <b>1100324 002</b>		Order Date <b>1/31/11</b>		Commodity Code	
Dim 1 <b>5.2500</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>253271</b>	Customer I.D. <b>002573</b>	Customer Purchase Order <b>5400092936-R01</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>17-4</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>414222</b>	Weight	

**Ship  
To****Attention: TKX LOGISTICS  
COPPER AND BRASS SALES  
8001 THYSSENKRUPP PARKWAY  
NORTHWOOD, OH 43619****Sold  
To****VALBRUNA STAINLESS, INC.  
2400 TAYLOR STREET WEST  
FORT WAYNE, IN 46802**

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.

*Handwritten:*  
Copper & Brass Sales  
TK Materials  
pec 235018  
Weight: 302.454  
2401573.022  
AD

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

**Dennis Hackett**

**VALBRUNA****SLATER STAINLESS, INC.**2400 Taylor Street West, P.O. Box 630  
Fort Wayne, Indiana USA 46801  
Phone: 260-434-2892 Fax: 260-434-2905**Product Certification Report**Report Number: **4702250**

Certified on Sep 21, 2011 Page 1 of 2

Order I.D. <b>11017-03 003</b>		Order Date <b>7/08/11</b>		Commodity Code	
Dim 1 <b>4.5000</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>254453</b>	Customer I.D. <b>002474</b>	Customer Purchase Order <b>30806</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>630</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>415317</b>	Weight	

**Ship To****VALBRUNA STAINLESS, INC.**  
**13950 BENSON AVENUE**  
**CHINO, CA 91710****Sold To****VALBRUNA CORP.**  
**31 IRON HORSE ROAD**  
**OAKLAND, NJ 07436****Lifts: 0016 0017**

API 6A

AISI 17400

EN 10204 3.1

UNS S17400

AMS 5643R (except finish)

ASTMA 564-10 Type 630

ASTM A484-10

ASMESA-564-07

**CHEMICAL ANALYSIS**

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.04	.48	.017	.024	.44	15.83	4.43	.19	3.39	.04	.27	.001	.27

**BRINELL HARDNESS ASTM E10-08**

HBW

348

**TENSILE PROPERTIES ASTM E8-08****CAPABILITY**

Cap HB	TS (PSI)	.2%YS (PSI)	%EL(4d)	%RA	AGE(F)
430	198800	174800	11.0	48.6	900

**MAGNETIC PARTICLE TEST**

FREQ SEV

AVG .00 .00

**PRODUCTION HEAT TREATMENT**

SOL-ANN(F)	SOL-ANN(HR)	QUENCH
1900	8.25	Air

**MACRO ASTM E340-00/E381-01**

MACRO

OK

OK

OK

**GRAIN SIZE ASTM E112-96**

GRAIN SIZE	Etchant	Magnification X
6	Marbles	100

**PERCENT FERRITE**

% FERRITE	Etchant	Magnification X
AVG .9	Marbles	100

Reduction ratio 5 To 1 Min.

Electric Furnace melted; AOD refined.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

  
 Dennis Hackett

**VALBRUNA****SLATER STAINLESS, INC.**2400 Taylor Street West, P.O. Box 630  
Fort Wayne, Indiana USA 46801  
Phone: 260-434-2892 Fax: 260-434-2905**Product Certification Report**Report Number: **4702250**

Certified on Sep 21, 2011 Page 2 of 2

Order I.D. <b>1101783 003</b>		Order Date <b>7/08/11</b>		Commodity Code	
Dim 1 <b>4.5000</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>254453</b>	Customer I.D. <b>002474</b>	Customer Purchase Order <b>30806</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>630</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>415317</b>	Weight	

**Ship  
To**VALBRUNA STAINLESS, INC.  
13950 BENSON AVENUE  
CHINO, CA 91710**Sold  
To**VALBRUNA CORP.  
31 IRON HORSE ROAD  
OAKLAND, NJ 07436

Ultrasonic test OK.

Chemical testing performed to one or more of the following ASTM methods: E415-08, E572-02a, E1019-08, E1085-95,  
Location of tensile fracture: inside middle of gage length.

Chemical Analysis performed at Acciaierie Valbruna, Italy.

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.

2401574202  
12/5/11  
12R

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